REMARKS

New Claims 25-27 are presented for examination and Claims 2, 7, and 17 are cancelled herein. Claims 1, 3-6, 8-16, and 19-27 are pending. This Amendment is responsive to the Office Action dated April 21, 2004.

Objections to the Drawings

Page 2 of the Office Action indicates that Figures 1 - 4 should be designated with a legend such as --Prior Art--. Applicants have amended Figure 1 and 2 to include the legend PRIOR ART. However, Applicants respectfully submit that nothing in the specification indicates that Figures 3 and 4 constitute prior art against the claims.

Page 2 of the Office Action further indicates that the drawings are objected to as not showing every feature of the claims, however, does not identify which features are not illustrated. Applicants submit that the drawings are acceptable as currently submitted. Should the Examiner have specific concerns about any feature in the claims, he is requested to identify those features, so that such concerns can be addressed.

Objections to the Claims

Page 2 of the Office Action set forth an objection to Claims 2 and 4 as having the same limitations, and to Claims 11 and 14 as having the same limitations. However, Claims 2 and 11 have been cancelled, and their subject matter included in independent claims 1 and 10, respectively. Applicants respectfully disagree with the assertion that the claims are objectionable because they include the same limitations, as the language of the claims is clearly not the same.

Rejections under 35 U.S.C. § 112, second paragraph

The claims been amended where appropriate to address the antecedent basis concerns identified at pages 3 and 4 of the Office Action. The claims have also been amended to address the concerns set forth on page 3 of the Office Action regarding certain terms asserted to be unclear. With respect to the objection to claim 4 on the basis that it is not clear whether the * refers to the complex conjugate, Hermitian, or transposed operation, attention is drawn to page 6 of the specification, where it is noted that * refers to complex conjugate. With

respect to the objection to claim 4 on the basis that MED is indefinite, attention is drawn to page 14 of the specification, which defines the MED term.

Withdrawal of the rejections of claims 2, 4-5, 7, 9, 11, 14-19, 22, and 24 under 35 U.S.C. § 112, second paragraph, is respectfully requested.

Allowable Claims

Page 8 of the Office Action indicated that Claims 4-5, 9, 14-15, 19 and 24 would be allowable if rewritten to overcome the rejections under 35 U.S.C. § 112, second paragraph set forth in the Office Action and to include the limitations of the base claim and any intervening claims.

Claims 4, 9, 14, 19 and 24 have been written in independent form to include the features of their base claims 1, 6, 10, 16, and 20, respectively, and to address the 35 U.S.C. § 112, second paragraph issues. In addition, several of the claims have been amended in minor ways to address minor informalities.

For at least these reasons, Claims 4-5, 9, 14-15, 19 and 24 are believed to be in condition for allowance.

All Claims are directed to Allowable Subject Matter

Page 4 of the Office Action set forth a rejection of claims 1, 6, 8, 10, 16, and 20-21 as being anticipated by U.S. Patent No. 4,797,807 to Gerlach.

Claim 1 has been amended to include the subject matter of Claim 2. Claim 6 has been amended to include the subject matter of Claim 7. Claim 10 has been amended to include the subject matter of Claim 11. Claim 16 has been amended to include the subject matter of Claim 17. Claim 20 has been amended to include the subject matter of Claim 23.

Accordingly, Claims 1, 6, 8, 10, 16, and 20-21 are not anticipated by U.S. Patent No. 4,797,807 under 35 U.S.C. § 102(b).

It is noted that the Office Action set forth rejections of Claims 2, 7, 11, 17, and 23 under 35 U.S.C. § 103(a) as being obvious based on a hypothetical combination of U.S. Patent No. 4,797,807 and U.S. Patent No. 4,606,054 to Amitay et al. The following

paragraphs address these rejections with respect to the newly amended claims 1, 6, 8, 10, 16, and 20-21.

Claim 1, as amended, includes the features of Claim 2, and is directed to a signal processing building block for use in an adaptive signal processing system. The building block includes a main input channel which receives a main input signal, an auxiliary input channel which receives an auxiliary input signal, and a processing mechanism that generates a complex adaptive weight and applies the computed complex adaptive weight to a function of the main input signal and the auxiliary input signal to generate an output signal. The complex adaptive weight includes a sample median value of a real part of a ratio of a main input weight training data signal to an auxiliary input weight training data signal, and a sample median value of an imaginary part of the ratio of a main input weight training data signal to an auxiliary input weight training data signal.

U.S. Patent No. 4,797,807 to Gerlach is directed to method for decorrelating multiple input channels by direct adaptive filtering of multiple input channels using Gram-Schmidt orthogonalization. As acknowledged by the Office Action, Gerlach does not disclose a processing mechanism that generates a complex adaptive weight and applies the computed complex adaptive weight to a function of the main input signal and the auxiliary input signal to generate an output signal, where the adaptive weight includes a sample median value of a real part of a ratio of a main input weight training data signal to an auxiliary input weight training data signal, and a sample median value of an imaginary part of the ratio of a main input weight training data signal to an auxiliary input weight training data signal. The Office Action points to U.S. Patent No. 4,606,054 to Amitay et al. as disclosing these features. In particular, the Office Action points to the output of block 602 in Figure 7 of Amitay et al. as being a complex adaptive weight which comprises a sample median value of the real part of a ratio of a main input weight training data signal to an auxiliary input weight training data signal, and a sample median value of an imaginary part of the ratio of a main input weight training data signal to an auxiliary input weight training data. The Office Action also asserts that $A_h(f)$ corresponds to a main part weight training data signal, $B_h(f)$ corresponds to an

auxiliary input weight training data signal, and that $G_h(f) = -A_h(f)/B_h(f)$ corresponds to adaptive weight coefficients.

Applicants respectfully submit that there is no disclosure in Amitay et al. of an adaptive weight that includes a sample *median* value of a real part of a ratio of a main input weight training data signal to an auxiliary input weight training data signal, and a sample *median* value of an imaginary part of a ratio of a main input weight training data signal to an auxiliary input weight training data signal.

Amitay et al. at col. 8, lines 42-47 states that: " Each of the two such outputs in each measurement subcircuits will consist of periodic pulses, corresponding in time to the probing interval periods, with the intervening times containing low-level noiselike variations caused by random data. If the outputs of integrate-and-dump circuits 511 and 512 are respectively connected to full-wave rectifiers 601 and 602 and the rectifier outputs are summed via adder 603, a periodic unipolar pulse stream will be available for extracting timing controls for switches 501, 513 and 514".   At column, 9, lines 45-64, Amitay et al. explains that element 602 is an arithmetic unit that calculates the magnitude and phase of the complex quantity e_n /b_n for n=1, 2, . . ., N, using equations (16) and (17) respectively. Equation (16) shows that the magnitude of e_n/b_n is equal to $[(X_n^2 + Y_n^2)/((X'_n)^2 + (Y'_n)^2]^{1/2}$, where X_n and Y_n are quadrature related components of e_n and X'_n and Y'_n are quadrature related components of b_n, and e_n is the error signal response at node 304 for the nth spectral tone, b_n is the co-polarization channel response for the nth spectral tone in the H-POL probing sequence, and e_n and b_n are measured during bursts (col. 7, lines 6-10). At column 5, lines 4-14, Amitay et al. explains that $A_h(f)$ is a cross polarization response at a spectral tone frequency and $B_h(f)$ is a frequency response at this frequency. In contrast to the assertion in the Office Action, nothing in Amitay et al. indicates that the output of the arithmetic unit or rectifier 602 comprises a sample *median* value, much less a sample median value of a real part of the ratio of a main input weight training data signal to an auxiliary input weight training data signal, and a sample median value of an imaginary part of the ratio of a main input weight training data signal to an auxiliary input weight training data signal.

Accordingly, even the hypothetical combination of Gerlach and Amitay et al. discussed in the Office Action would not have all the features set forth in Claim 1. Thus, Claim 1 is allowable over the combination of Gerlach and Amitay et al.

Claims 6, 8, 16, and 20 also each include the feature of a processing mechanism that calculates a complex adaptive weight and that the complex adaptive weight comprises a sample median value of a real part of a ratio of a main input weight training data signal to an auxiliary input weight training data signal, and a sample median value of an imaginary part of the ratio of a main input weight training data signal to an auxiliary input weight training data signal. Thus, these claims are allowable for at least the same reasons that Claim 1 is allowable.

Claim 10 is directed to a method that includes a processing mechanism calculating the complex adaptive weight w_{med} by calculating a sample median value of a real part of a ratio of a main input weight training data signal to an auxiliary input weight training data signal and calculating a sample median value of an imaginary part of the ratio of a main input weight training data signal to an auxiliary input weight training data signal. As discussed in the paragraphs above addressing Claim 1, neither Amitay et al. nor Gerlach discloses this feature. Accordingly, Claim 10 is allowable over the hypothetical combination of Amitay et al. and Gerlach for at least the same reason that Claim 1 is allowable.

Claim 12 is directed to a method that includes a processing mechanism calculating the complex adaptive weight w_{med} by calculating a sample median value of a real part of a ratio of a main input weight training data signal to an auxiliary input weight training data signal. This feature is not found in either Amitay et al. or Gerlach. Nothing in Amitay et al. indicates that the output of rectifier/arithmetic unit 602 includes a sample *median* value, much less sample median value of a real part of a ratio of a main input weight training data signal to an auxiliary input weight training data signal. Claims 18 and 23 are allowable for the same reasons that Claim 12 is allowable.

Claim 13 is directed to a method that includes a processing mechanism calculating the complex adaptive weight w_{med} by calculating a sample median value of an imaginary part of a

ratio of a main input weight training data signal to an auxiliary input weight training data signal. As discussed in the paragraphs addressing Claim 1 above, neither Amitay et al. nor Gerlach discloses this feature. Accordingly, Claim 13 is allowable over the hypothetical combination of Gerlach and Amitay et al.

New Claims

New Claims 25 - 27 are provided to set forth subject matter to which the Applicants are believed to be entitled, and not found in the cited references.

Conclusion

In view of the foregoing amendments and remarks, reconsideration, reexamination, and allowance of the present application is respectfully requested. Should the Examiner have any questions about this Amendment, or believe that a telephone conference would assist in resolving any issues, he is cordially invited to contact the undersigned at the number listed below.

The enclosed Fee Transmittal authorizes the Commissioner to charge the three month extension of time fee, the additional claim fees, and any other fee that may be due, to Deposit Account No. 50-0281.

Respectfully submitted,

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